



# Serial Advanced Technology Attachment (SATA) Connectors and Cable Assemblies, 1.27 mm



3M™ SATA Combo Receptacle

3M™ SATA Signal Plug, Boardmount,  
SMT Right Angle and PTH Vertical

3M™ SATA Combo Device Plugs

## 3M SATA Connectors Provide Smaller, Faster and More Reliable Solutions for Storage Interface

The 3M Serial Advanced Technology Attachment (SATA) Connector solution is a next generation, high-speed interface for optical, solid state and hard disk drive (HDD) applications aimed at reducing size, increasing transmission speed, improving data reliability and increasing ease of use. SATA, along with Serial Attached SCSI (SAS), is the next in 3M's development for serial data I/O solutions targeting the disk drive storage market.

By offering both SATA and SAS solutions, our customers now have the freedom to choose the solution that best meets their disk drive storage needs.

Although ATA is traditionally recognized for desktop (PC) applications, the revised serial version was developed with a 10-year roadmap that provides compelling price/performance capabilities, making it a viable alternative to existing technologies in the server and network storage markets aimed at non-critical (near line) data storage applications.

SATA components were designed on a 1.27 mm (.050") in-line contact pitch and are recognized in two interface segments. The first segment is the single link signal portion. SATA signals have been condensed into a very simple 7-contact format. SATA signal connectors rely on two differential pairs (four contacts) which are surrounded and separated by three ground contacts (G-SS-G-SS-G). The two pairs serve as the transmit (Tx) and receive (Rx) contacts while the three grounds also function as the EMLB contacts making SATA hot pluggable. The second interface recognized in the SATA connector is the power segment. The power segment is comprised of 15 contacts and is capable of accommodating three different voltage ranges (3.3v, 5v & 12v). Each voltage is allocated three contacts for standard power: positive (+), negative (-) and ground (G). This leaves six additional contacts in the power interface for hot plugging, two contacts per voltage range.

The signal plugs are available in both a 7-position stand-alone or in combination with power.

The 7-position signal plugs are available in a variety of configurations and PCB attachments to increase the ease of access while interfacing the host board (typically a PCI card, RAID controller or SATA port multiplier) with the device (HDD).

The 22-position combo receptacle is designed to serve as a backplane interface. The combo receptacle versions are designed with the L-shaped polarization and guide post to assist in blind mating with the HDD and provide a direct attach to the backplane or PCI mezzanine card eliminating the need for cabling. The combo receptacles are available in a variety of surfacemount, through hole and press-fit versions. 3M offers vertical configurations in both standard and extended heights along with a right angle version that allows the user to mount the device flush to the PCB.

The 3M SATA Combo Plugs, 22-position, are used on the device side (optical, solid state or hard disk drive) and have a variety of features that make them appealing for high volume environments. The co-planar version uses gull-wing surfacemount tails that are housed in RoHS compliant\*, molded, high temperature plastic bodies. This version has PCB guides that help ensure proper alignment between the PCB and the contact tails. As specified with all in-the-box SATA connectors, the combo plug includes the L-shaped polarized contact bar and guide rails to ensure consistent and accurate blind mating. 3M also offers a right angle, through hole version of the 22-position device plug.

All of the SATA connectors are designed to interface with standard 2.5" and 3.5" HDD.

## Technical Information

- 1.27 mm In-line Contacts
- EMLB Contacts for Hot Plugging
- Extended Height Combo Receptacle for Backplane
- L-Shaped Polarization
- Low Voltage Requirement (500 mV peak-to-peak)
- Point-to-Point Signaling
- Accommodates 3.3v, 5v and 12v Requirements
- 1 Meter Signal Cables
- Blind Mate Guide Rails
- 2.5" and 3.5" HDD Interface
- Rugged Over Mold Assembly Construction
- Right Angle Combo Host for Flushmount and PCI Mezzanine Card Applications
- RoHS Compliant\*

\*\*RoHS compliant\* means that the product or part does not contain any of the following substances in excess of the following maximum concentration values in any homogeneous material, unless the substance is in an application that is exempt under RoHS: (a) 0.1% (by weight) for lead, mercury, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers; or (b) 0.01% (by weight) for cadmium. Unless otherwise stated by 3M in writing, this information represents 3M's knowledge and belief based on information provided by third party suppliers to 3M.



3M™ SATA Signal Cable, Straight, Right Angle and Combination



3M™ SATA Power Cable, Y Configuration

## 3M™ Serial Advanced Technology Attachment (SATA) Cable Assembly Solutions

3M SATA Signal Cables, 7-position, are constructed of rugged, over-molded connector housings and are available in right angle or straight configurations. The receptacle interface includes the standard L-shaped polarization architecture which helps prevent misalignment with the mating interface. The core is a 26 AWG stranded wire that is oriented into two differential pairs and three grounds. The smaller 7-position cabling configuration can improve airflow which yields cooler electronic appliances. The signal cables are available in .5 meter and one meter lengths and are designed to support the Generation I and II SATA transmission specifications.

The 3M SATA Power Cable Assemblies are configured to accommodate dual devices. The power supply side connector is a standard 6-pin universal plug capable of interfacing with most standard AT style power supplies. The power supply side connector fans out (Y-type) to two 15-position power segment receptacles that are constructed of a rugged, over-molded connector housing. The assembly uses 18 AWG wire to distribute power (orange for 3.3v, red for 5v and yellow for 12v) along with two common grounds (black) per 15-position power segment. In addition to the standard positive, negative and ground power configurations, the 15-position power segment also contains six additional EMLB contacts, two for each voltage level. The 15-position power segment incorporates an L-shaped polarization architecture helps prevent misorientation while mating to the plug interface connector.

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Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use.

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